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Command and Control: Kunsan

In the fall of 1959 I moved to Camp Smith, CINCPAC headquarters in Hawaii [as part of the Office of Naval Research (ONR) Study Group on CINCPAC (Commander in Chief Pacific) Command and Control of Nuclear Weapons]. I didn't agree to stay for the whole year since my wife wasn't willing to accompany me. But I did go for several months at first, then went back repeatedly during 1960 to help the group in later states of their report.

The basic problem we were to look at was how to assure reliably that an "execute" message ordering the implementation of nuclear war plans would get out to the various forces in the Pacific, if a decision were ever made to use nuclear weapons. But there were many related questions.

Another problem that I was interested in was reducing the possibility of unauthorized action: how to assure that no subordinate would be able to launch the forces under his command in the absence of an authorization from his superiors or from the President.

A third problem was how to assure the survival of authority at various levels of command so that the whole command structure couldn't be put out of action by a coordinated surprise nuclear

attack.

[Describe linkages between these problems.]

Eventually, in examining these problems, I was in almost every command poast and in particular every underground command post in the Pacific and the US. For survivability, the locations of most of these were supposed to be secret, but since hundreds of people worked at these places, that was not an easy secret to keep from local residents. For example, the US command post in Japan was in what had formerly been, as many Japanese knew, the underground Japanese Imperial Command Post, in the outskirts of a suburb of Tokyo.

In Hawaii a major command post was located underground in what had originally been an ammunition storage depot, built under a pineapple field in Hawaii during the Second World War. Its secret location wasn't shown on any of the local maps. The first time I drove out through the pineapple fields to visit it, I had directions that located it near a particular crossroads. I got lost, and stopped at a small grocery store by the road to ask directions to the crossroads.

The woman behind the counter said, "Oh, you mean the underground?" She proceeded to give me precise directions not only to the crossing but to the entrance to the secret facility.

Apparently lots of visitors needed help on their first try.

Other aspects to their survivability were equally problematic. Their main advantage was that they were underground and heavily reinforced with concrete. But the older ones had been designed to survive an attack by conventional, high explosive bombs, not nuclear weapons and especially, not high-yield thermonuclear weapons (H-bombs). So very little attention had been, in particular, to blast doors, as of the start of the '60's.

Even if a structure underground or inside a mountain had enough rock and concrete shielding it to survive an explosion directly above it, the blast from a nuclear explosion, whether above it or anywhere in the vicinity, would be so great and so pervasive that it would blow through any ordinary security door and kill everyone inside. The same was true for every aperture letting in ventilation or letting out communications via cables and antennas. They had all to be equally secure against blast pressure, along with the doors, or the whole facility was worthless in terms of survival.

This was not an easy problem to solve, but it wasn't the only one. Even if the people inside should survive, assuring that they could communicate outside after a nuclear attack was difficult. For example, an explosion could destroy the operation of all the radio transmitters inside, even if the human operators survived,

just by shaking up all the electronic equipment, apart from more esoteric and intractable electronic and magnetic effects on their functioning.

Most of the members of our study group were communications specialists looking at problems like these. They were responding to the real interest of CINCPAC and his staff in establishing the study, how to assure that they could carry out their mission of exploding nuclear weapons over Russian and Chinese targets when appropriate. But in their extreme preoccupation with this problem, these staffs tended very sharply to deemphasize certain others, such as the problem that attracted my own attention, assuring that these weapons not explode when not appropriate.

A little more than lip service was paid to dealing with the latter issue, but not enough to give any real assurance. The priorities, in terms of attention and of preventive action, were very, very strongly skewed in the other direction.

This was especially true because the military operators were aware that there was a very high likelihood, much greater than presidents and other civilians were likely to realize, that both command authority and communications would be disrupted in a nuclear attack.

On the one hand you had a legal and policy framework that

presumed that only the president could decide on and order the irrevocable launching of nuclear weapons. That was what the public was told and wanted to believe, and probably most presidents believed it when they came into office and for some indefinite period after that. After all, that was a transcendent decision, and the president (not, by law, the vice president) was the only elected political leader in the military chain of command.

At the same time most military officers up and down the chain of command were aware that the president himself could easily be killed by a bomb on Washington. It wouldn't even have to be a nuclear bomb, just a terrorist blast. For that matter, even a gunshot, inside or outside the Washington area depending on where the president was, could deprive the chain of its Commander in Chief until civilian succession could be established, as we saw in 1963 and 1981. But even a small nuclear weapon in Washington could take out nearly all the civilian successors simultaneously, along with the military high command. And a handful of other weapons, a tiny fraction of what would be launched in a major attack, could destroy command posts and communications centers outside Washington.

These officers lived with what was for them a nightmare: that in the event of actual enemy attack there was no high likelihood that a retaliatory "execute" command authorized at high levels would ever be sent or would reach the actual operating levels of

the nuclear delivery forces.

As a result there was great resistance on their part to the very notion of procedures or devices that would make it _physically impossible_ for those at lower levels to take nuclear actions on their own in the event of an actual war.[1] Such procedures or systems could lead to the paralysis of our nuclear retaliatory capabilities, their inability to carry out what these officers saw as their most important, virtually sacred mission on which the physical survival of the nation depended, precisely at the moment when it was most needed. The very possibility of this, understood by the enemy, jeopardized deterrence and made this nightmare more likely.

At the same time, these officers had always to give lip service to the assumption that only the President could "release those weapons." The net effect of these pressures was that they chose not to look closely at the system that really resulted from their choices. That system, I discovered when I did look closely at it, left enormous leeway, in fact almost untrammeled opportunity, for individuals to carry out unauthorized action.

Between 1958 and 1961 I had become as knowledgeable as anyone in the country on the details and possible defects of this control

system. In fact, in the spring of 1961 I once received a phone call from the Pentagon from Adam Yarmolinsky, who identified himself as the Assistant to the Secretary of Defense. It was my first exchange with Yarmolinsky, who two years later offered me a job as his deputy. He started by saying he had been told that I was the most knowledgeable civilian expert on command and control. I said that could be true. He said that Stanley Kubrick, who was just starting work on Dr. Strangelove, hadn't yet decided whether he would allow the Department of Defense to view his rushes, or a rough cut of the movie. If he did, was I willing to be their representative in reviewing it? I said I would be happy to do it. But Kubrick decided against it.

The movie didn't come out till 1964. Harry Rowen and I took an afternoon off from the Pentagon to go see it in Washington. When we came out into the sunlight, we looked at each other and agreed that it was no fiction, it could as well have been presented as a documentary. Harry had heard my stories. There was nothing in it that couldn't have happened the way Kubrick showed it, including the personal interactions. We had a feeling we had met prototypes for the military officers and civilian analysts on the screen.

At that time I thought that the problem presented in William Burdick's book Fail-Safe and the movie based on it, a mechanical or electronic failure by a computer that transmitted an improper

direction, was not very likely to lead to an unauthorized launch, since there were many levels of human intervention at various points. Actually, three major false alarms occurred in 1976 [check date] along these lines, two of them from failure of a minor transistor and one from the transmission (by human error) of a test tape of a simulated attack.

But by the late '50's I had already read the book on which Strangelove was based, Red Alert by Peter Bryant, as had many people at RAND. The name Bryant was apparently a pseudonym for someone who seemed strikingly familiar with actual operational procedures. (I heard later that the real author was a former officer in the strategic bombing command of the RAF).

The more I learned, the more I became aware of the possibility that an honest misunderstanding of a situation by a lower commander might lead him to believe that it was his duty to carry out such an attack. (This possibility was alongside that imagined by Terry Southern in the screenplay of Dr. Strangelove, where a base commander acts on sincere but more delusional concerns about protecting vital fluids from Communist menace). If so, I found, he had the physical and operational capability to do it.

From the beginning of my work at RAND in the summer of 1958, I had been concerned with the "false alarm" problem. My focus on this reflected the immediate match between my work at Harvard on

ambiguity and decision-making under uncertainty and the earliest RAND analyses I was reading by Albert Wohlstetter and others on the likelihood that the warning of attack that would reach the president would <u>be</u> highly ambiguous, and how this might affect his decisions.

That likelihood was the central premise of their analyses and their recommendations. What should the president do, and prior to that what options should prepared for him to choose among, in the face of conflicting and uncertain warnings of enemy attack? How <u>should</u> the president and the system as a whole prepare for the possibility and respond to the fact that evidence and even firm predictions of enemy attack may occur which may be misleading, false, in that no attack is actually underway? And how is the present system <u>likely</u> to respond?[2]

Wohlstetter took credit for originating the "positive control" process, as a partial answer to this problem.[3] This created a "launch on warning" option with respect to bombers that was separable from the decision to execute the war plans, i.e., to send the bombers to target.[4] This made it appear safe enough to launch planes, in order to protect them from being destroyed on the ground by enemy attack, to delegate authority to do this to base commanders or higher military authorities below the level of the president.

The system I was introduced to looked like this. [W h a t
follows is a rough, a long, first draft. It will be edited and
condensed.]

According to the Top Secret war plans, any order to "Execute"
a nuclear war plan had to be based on an immediate, explicit order
from higher authority, ultimately from the President himself.

But there were provisions in the plans for taking various
preparatory actions on local authority, and even for launching
planes on warning of imminent enemy attack, to protect them from
destruction. Such a launch was not supposed to be tantamount to a
decision to "Execute," i.e., to proceed to targets.

It would be under "positive control," which meant that the
planes were to proceed to a predesignated rendezvous area, where
they would circle till they got an explicit, "positive" order
either to "Execute," i.e., to proceed to targets, or to return to
the base. If they got no order at all, they were to return to
their base, at the point when they had just enough fuel to do that
safely.

This procedure was also known as "fail-safe." Thus if there
were a failure in transmission from the base, a failure to transmit
an intended signal either to go ahead or to return, the planes were
to act as if they had gotten a message to return. This response

might be an error if there was actually a war on, but a "safer" error than the mistake of going to target when there was no war on.

The purpose of the positive control procedure was to give force commanders the delegated authority to get their planes into the air so they wouldn't be destroyed on the ground, without giving them authority to initiate a nuclear attack. It separated, both formally and practically, the order to launch from an order to attack.

The term "positive control" or its synonym, "fail-safe procedure," meant that the pilots were to be trained and drilled to understand that they were never to go to target under any circumstances without a positive and authenticated order, explicit and immediate, from higher authority to do so.

They were not to assume that that was desired or appropriate under any circumstances if they had not been told specifically at the time to do it. And that order had to be "authenticated" as coming from the highest authorities, i.e., it had to be accompanied by coded evidence and to come in a manner that made its origins at highest levels unmistakably clear.

The were not to assume that a launch order amounted to an execute order, or that it would certainly be followed by an execute order, even if it came under circumstances when an enemy attack was

expected.

The question I chose to address was, how reliably would their behavior conform to these instructions? I knew from my own experience in a highly disciplined organization, the Marine Corps, and from my reading of military history, that their actual beliefs would not depend only on what they had been told to assume or not to assume but on their actual experience. And their behavior would reflect to some extent their actual beliefs, not just what they had been told to do under prescribed assumptions.

Discipline, even, perhaps especially, in an elite outfit, didn't guarantee robotic, rote-like performance. Contrary to popular belief, it wasn't meant to. At least, that was what I had learned in the Marines, not only from my own gut experience but from those officers and men I had met or read about that I most respected.

Thus, to take a naval example, a helmsman or officer of the deck on the bridge of a ship, whose captain is asleep in his bunk, may suddenly perceive that the ship is about to run aground or to hit another ship if he continues to carry out his standing orders or the last instructions he received.

He can continue to carry out those orders, or he can try to

wake the captain or to get a decision from some intermediate authority, or he can take an initiative to avert the collision that violates his current orders. If he takes the initiative, he will probably be investigated for insubordination and he might be punished, even if he does save the ship. But he might feel that that was the right thing to do even if he were punished for it.[5]

Some of them, including some of the most loyal, dedicated, obedient among them, will do not what the letter of their orders demand but what they believe their leaders would want them to do if they shared their subordinates' knowledge about the actual local circumstances and if they could reach a decision and communicate it to the subordinates in time to take appropriate action.

Such "ifs" reflect an understanding of operational realities that some without experience inside large and farflung bureaucracies may not appreciate. Messages take time to travel, often an unpredictably long time even when they are assigned the highest priority and individual parts of the journey are at the speed of light. In large organizations they go through several stages before they reach their intended audience; each of these stages occupies time and introduces a chance of error in transmission and a chance that the messsage will be totally misrouted or aborted so that it never gets through.

If and when a query or warning from a subordinate does get through, it competes with many other messsages from others for the

superior's attention. If it does get some attention, its import and urgency may or may not be comprehended. Time is needed for a decision; and the decision, communicated back to the subordinate, goes through similar delays and possible errors. And atmospheric conditions or enemy action might block transmission altogether.

When we see the light of a distant star, we know (at least, an astronomer does) that the star itself may have ceased to exist years ago, while its light was travelling to us. And when the order of a distant commander arrives in the field, an experienced field officer knows that it reflects the understanding of the higher commander and his staff of the local situation as it was some time ago, or as it was then expected to be at the moment the order is received.

The actual situation at this moment may be entirely different from what it was or was expected to be. Of course, the order will also reflect information available to the higher commander and various considerations that the subordinate doesn't share. Knowing this, the conscientious field officer in a situation where the order looks highly inappropriate for reasons that the high command probably doesn't yet know must at least ask himself, "What would my commander want me to do if he was here at this moment?"

If there seems to be time and capability, the field officer may send back a query, a warning, an updating on local conditions,

up through channels to his superior, even if he knows that this questioning of his orders is likely to be perceived negatively, as troublesome or insubordinate or incompetent. It might even be against a standing rule. (A nuclear "Execute" order was supposed to be obeyed instantly without eliciting queries that might clog communications channels. In practice, the first "Execute" order since Nagasaki, 1945, was likely to evoke a back-tide of requests for corroboration.) That is one of his real options. But there might not seem time for it, given local conditions and given the sense of urgency conveyed by the order itself to do <u>something</u> appropriate.

Likewise, the <u>lack</u> of a positive order to execute, following an order to launch that was accompanied or followed by strong signs of an enemy attack, <u>will be ambiguous</u>. It may mean that a return to base is desired. It is certainly supposed, according to the written rules, to be responded to eventually as if it surely meant that.

Nevertheless, it may mean that an order to execute has been sent but has not arrived yet, and may not arrive in time for it to be carried out with remaining fuel. Or that it would have been sent and received had not enemy nuclear attacks wiped out the commander or the transmitter or interfered with the transmission.

It could, in other words, be a very ominous indication,

depending on what other evidence is available. For example, how often had they had the <u>experience</u> of getting to this point, of circling in a rendezvous area, without getting a message to return and without, as it turned out, their base having been under attack?

If the whole procedure were practiced often enough up to this point, the pilots would come to expect on any given occasion, in the absence of any other evidence, that they were taking part in a drill. And they would have acquired a habit of returning. They wouldn't feel any pressure to break that habit, to disobey their standing orders and to take off for their targets, even if they got no further orders. They would return to their base routinely.

But our CINCPAC study group found on our field investigations that it was not at all clear that most pilots in the Pacific got a chance to acquire such a habit. The first part of the procedure was practiced very frequently, in fact daily, at random times, up to the point where planes were ready to taxi for takeoff. We actually witnessed this on our visit to Kadena Airfield on Okinawa. [At some point this story is to be told]. That was to assure that the planes would be ready to take off in time when ordered. At that, practice had made them perfect.

But the later part of the procedure, to assure that they would come back from their rendezvous area unless they were ordered to proceed, was much more time-consuming and expensive in fuel and

maintenance, and it was clearly practiced much less often. We asked, was it ever rehearsed at all? Answers on that were vague and conflicting. It was understood that SAC, which had invented this procedure, did do full-scale rehearsals of it frequently, but it was not clear that theater forces ever did.

In fact, we learned at Kadena that the tactical alert planes there never actually left the ground in their daily drills, and that wasn't just for reasons of expense. They were barred even from taxiing from their alert pads to the point of takeoff. The reason, we were told, was the danger of accident, possibly a nuclear accident.

Each of the alert planes, single-person F-100's, was carrying an underslung nuclear weapon outside the plane, beneath the undercarriage. Many of these weapons, we were told, were of a type that were shortly to become obsolete. They were not "sealed pit." They were designed to carried <u>inside</u> a plane, for greater safety; but there was no room for that in these tactical fighter-bombers.

Moreover, they were not "three-point safe." These H-bombs, thermonuclear fusion weapons, were triggered by a plutonium bomb of the type that destroyed Nagasaki. The plutonium core was surrounded by a spherical web of shaped-charges of high explosive. When these all detonated simultaneously, they "imploded" the plutonium core inside, squeezing it to a density that gave it

greater than critical mass, leading to a nuclear fission explosion that in turn triggered the thermonuclear fuel.

"Three-point safe" meant that the design ensured that if one, two or as many as three of the high-explosive shaped-charge sections exploded accidentally, no significant nuclear yield would result. Only if more than three went off--from being dropped, burned, fired into, or from an electrical malfunction--might there be a partial nuclear explosion or a possible full yield.[6]

Since these weapons were not three-point safe--they may not have been one-point safe--there was a danger that if they were dropped, or involved in a crash or fire or explosion, one or two sections of the high explosive might go off and that might be enough to cause a partical or total nuclear explosion. While the probability of this was small, the risk was worth taking in a practice drill, which after all happened once a day.

Therefore, in these practice alerts, the pilots would jump into their planes and gun up the engines. But they didn't go to the point of racing down the runway, or even taxiing over to the runway from their pads, let alone take off. They didn't do this precisely because of the risk of an accident in which there would be at least a high explosive yield and possibly a partial nuclear explosion. This might happen if a plane heeled over and crashed, or two planes crashed into each other, while taxiing or

accelerating.

The pilots, of course, often flew their planes without weapons, when they were not on alert. And apparently they also did training missions with actual weapons. But we found it very hard to get a clear answer whether pilots on actual standby alert ever took off, in a practice drill, from their alert pads with weapons aboard. Certainly not very often, if ever. Probably never.

That said to me that if they ever _were_ ordered to take off from those pads, it would be an extraodinary, perhaps unprecedented, experience for the alert pilots. Even if it was in fact, unknown to them, only a drill, the first time (or two) that it happened would almost lead them to infer that "this was it," an enemy attack was underway or else they were leading a preemptive strike. At the very least, they would have to infer that the indications of enemy were more serious than they ever had been before. It would be in that state of mind that they would head for their rendezvous areas, even if received no "Execute" order to follow their "Launch" order.

This particular consequence of the lack of regular rehearsal of take-off under fully realistic simulated alert conditions didn't seem familiar to any of the nuclear control officers or pilots that I questioned. They all seemed to hear my reasoning as new, interesting and plausible. That was worrisome. They agreed: the

first time, even the first few times, that alert pilots found themselves circling in a rendezvous area with bombs aboard waiting for an "Execute" or a "Return" message, they would be strongly inclined to expect the first, simply because it was the first time they had ever gotten that far.

They would believe the war was on, or was imminent, because the commanders who had launched them unprecedently would appear to have thought so.

What if they had other reason to think that, as well? Suppose this launch came in a time of international crisis, either in the region or elsewhere in the world. Suppose there had been earlier "strategic warning" of heightened danger of war, or of attack. What if there were an actual war going on in the area, between China and Taiwan, or in Korea, or Indochina. (The second Taiwan Straits crisis had lasted for months just the previous year, 1958. I didn't know it at the time, but it had been, in fact, an intense nuclear crisis. That's another story, to be told elsewhere in this memoir.)

What if there were, in the course of the launch or soon after it, a nuclear explosion on an American airbase in the region, perhaps on this very base? On first thought, that might seem improbably coincidental, stretching too far for a "worst case." On second thought, not at all. (As far as I could tell from many

conversations, no one else in the area had had the first thought, let alone the second. No one found it implausible after a brief discussion).

It was only necessary to recall why the alert F-100s, despite a command obsession with realistic drills and with meeting standards, rarely if ever rehearsed to the point of take-off. It was precisely because of the serious danger of a crash and its possible nuclear consequences, with these particular bombloads. The other side of that reluctance, the very basis for it, was an estimate by commanders that that if a number of these planes actually taxied to the runway and took off in a great rush, one or more of them might bump into another or otherwise turn over, burn and explode, and produce a nuclear fireball.

That possibility itself wasn't remote from people's thoughts. It was why they didn't taxi. What they hadn't thought about was the next question. What would the effect of that event be on the minds of the alert pilots who had already taken off, either from that base, or from another one nearby, or even from a distant base in the same region?

They might, of course, guess at the true reason, that an unprecedented accident had occurred. But even if that occurred to them at all, it would be competing with another explanation, which might seem much more likely under the circumstances. After all,

why were they in the air at all, with their bombs aboard? A realistic, no-warning drill, for the first time, despite the risks? Or because higher authority had perceived evidence of an imminent enemy attack, <u>stronger than ever before</u>, perhaps certain? And now this explosion! The attack would appear to be taking place.

At this point a lot of communications would be taking place among the airborne planes and they would be attempting to communicate back to their base. But if there had been a partial nuclear explosion at that base, that would be impossible. The blast itself would probably have destroyed all transmitting points at the base, but beyond that the electronic effects of the explosion would disrupt all high frequency communications in a considerable area.

That would mean that the <u>last</u> signal that these planes would receive from their base, and perhaps, for quite a while, from any other bases in their vicinity, would be the sight of a mushroom cloud rising over the runway they had just left. They would then be out of communications locally. The later lack of an "Execute" or "Return" order, or any other, would have an easy explanation, and it wouldn't be routine. All this in the context of the fact that they had just received a "Launch" order that was unprecedented, or nearly so, a circumstance that in itself would make some or all of them nearly certain that an attack was imminent.

What this meant to me was that a false alarm so serious as to cause a "Launch" command to alert tactical forces in the Pacific (and probably anywhere in the world, at least where the weapons carried were such as to preclude frequent rehearsals of launch) was likely to generate the belief in the minds of some airborne pilots armed with megaton weapons that, although they had not received an execute order, general nuclear war was underway, and that they had no ability to receive an execute order because communications had been disrupted by the war.

Moreover, a "Launch" order could be followed closely by a nuclear explosion on a US base, precisely because it would lead to the actual launching of numbers of planes with nuclear weapons that were known to be less than maximally safe.   In fact, these probabilities, individually low but not independent, could cascade even further.

If the false alarm leading to precautionary launch was widespread in the theater or even worldwide, the numbers of bases and planes involved would greatly increase the chance of an accidental explosion somewhere.   But even if the initial takeoffs were at the initiative of a single base commander, a large explosion (even with high explosive alone; the cause and nature would be ambiguous for a time) and especially a nuclear explosion would lead to many precautionary launches elsewhere, likewise increasing the chances of a second explosion.   And any of these

would lead to many precautionary launches elsewhere, likewise increasing the chances of a <u>second</u> explosion. And any of these would simultaneously disrupt communications.

My knowledge of military interpretation of orders and military dedication, from my own experience in the Marines and, by now, a couple of years talking with high-level staff officers, convinced me that in that situation many of them would regard their <u>duty</u> as being to carry out their mission, their general war mission, in violation of the strict letter of their orders to await a positive authorization. The authorization would be unlikely to be forthcoming, they would suddenly realize, if an enemy attack had intervened soon after their launch orders.

Thus, without the commander contemplating a precautionary launch realizing it, and despite the positive control procedures in force, his command to launch might <u>be</u> tantamount to an execute order after all.

When I tried out this line of reasoning to experienced staff officers at various command posts and bases in the Pacific, nothing I heard back was reassuring. They found it unfamiliar and immediately plausible. No one came up with some operational characteristic or practice I had left out that lowered the odds of the disastrous sequence I was projecting.[7]

I felt I needed to test out these thoughts at the lowest level
of command. Looking at a map at headquarters in Japan, I picked
out a small airbase in Korea, Kunsan, the northernmost base with
nuclear alert planes in Korea, i.e., in the Pacific. In fact, its
alert planes with nuclear weapons may have been closer to Communist
territory than any others in the world. Our group could get rides
on military planes and we had a kind of "go anywhere, talk to
anyone, see anything" clearance. On short notice, I decided to
take a trip to Korea to talk to the officer in charge at Kunsan.

I landed in Seoul and got myself a ride on a light plane over
barren, unpopulated hills up to Kunsan. I found myself in
something like a little town in a frontier western, with a dusty
airstrip. The officer in charge of the base was an Air Force major.
He was in command of ten F-100s, each with an underslung Mark-28
thermonuclear weapon with a yield of 1.1 megatons.

One of those bombs had the explosive equivalent of half the
tonnage the US dropped in World War II. The major in charge of
this little collection of Quonset huts and planes in the hills
controlled six and a half World War II's worth of firepower.

As at Kadena, they weren't sealed pit weapons, not three-point
safe. They didn't practice taxiing or taking off in drills with
weapons aboard. A portion of this squadron was on alert at all
times. In fact, my memory is that all ten were, which would imply

that they had multiple crews, but it might have been just four or six. Because of the nature of the weapons and the way they were carried, as at Kadena, there would a danger if several of them were launched suddenly with weapons in an alert that there would be a collision or an accident that could produce a partial or a full thermonuclear explosion. That would eliminate all communications from that base and in a considerable area around it. The last information anyone would get (ever) from Kunsan would not be a message but evidence that a thermonuclear explosion had destroyed the base. How would other bases respond to that news?

Well, how would the major at Kunsan respond to news like that? Would he launch on planes on alert? If he were to do that on his own, I knew from a briefing at Osan, it would be against his orders. Because this base was so close to Communist radar, the base commander at Kunsan didn't have the normal authority to launch his planes at his own initiative, even as a precaution against attack, on positive control, because of the danger that either the Koreans or Russians would spot them on radar and interpret their precautionary launch as an attack. He wasn't to launch them at all, under any circumstances, except on direct order from higher headquarters via Tokyo, possibly relayed through Osan. I wanted to hear him reiterate that, then go on to test him on some hypothetical circumstances. But I had some preliminary questions.

We were just minutes of flying time away from North Korea, but these planes were targeted on northeast Russia, just a few minutes

further. I asked the major how long it would be, if they took off toward their rendezvous area, before they would be picked up on North Korean or Russian radar, and how long before they were out of line-of-sight communication with their base. He got edgy, said these were very sensitive questions, and refused to answer unless he "saw my authorization."

After he did this a couple of times I got irritated and said, "Well, we'll just have to call Japan and let you talk to someone." We went into his command hut and he tried to get headquarters in Japan by radio. This brought out the interesting fact that he was out of communications with Japan, and had been for the last couple of hours. He couldn't get through to Japan via the main headquarters in Korea at Osan, either. I asked him how often this happened and he said that "about once a day" atmospheric troubles of different kinds put him out of touch with Japan.

I didn't think it was worth pursuing our discussion till he'd talked to the Operations desk in Japan about my access, so I waited for almost an hour, reading magazines in his hut. Osan had an alert strip too, where I'd had some discussions before I flew up to Kunsan. It occurred to me that if there were a nuclear explosion there for the reasons I was exploring, Kunsan could be cut off from communications with the rest of the world.

Finally he got through to Japan and got the word that he could

tell me "anything." He asked me to run my questions by him again. I did, and he shook his head and said calmly that he didn't know the answers.

It was a funny follow-up to his expressed concern about security that had delayed us for the last hour. I asked myself if he was kidding me now, but he seemed sincere and I let it pass. And from then on he got quite communicative. He hadn't run into any researchers before at Kunsan and he seemed to enjoy speculating about the issues I was raising.

I asked if there were any circumstances when he would send his planes onto alert in the air. For example, what if he learned there had been a nuclear explosion at another base in the region? The major said, "Well, you know when I'm supposed to do it, don't you?" He seemed to be testing me, what I knew.

I said, "Yes, only when you get an order from Japan or Osan."

He said, "That's right. I'm not supposed to let those planes take off without a direct order." Without any break he went on to say, "But let me tell you, I'm the commander of this base, and every commander has an inherent right to protect his forces. That's one of the fundamental laws of war. It's the oldest principle of war that as a military commander I have the right and authority to protect my forces and if I believed that they were in

any danger, if I heard there'd been a nuclear explosion in the Pacific, I would send them off."

I couldn't figure why he was telling me this, why he seemed to want to put it on the record. We had just established that I was there investigating nuclear command and control for the Commander in Chief Pacific, Admiral Felt, and he was telling me in the most matter of fact way that he felt empowered by fundamental principles of war to violate very specific and explicit directives sent down by CINCPAC.

It was hardly a surprise to me that a field commander might come to feel like that under some circumstances. That was the intuition that had brought me to Korea. But I didn't expect that he had already thought it out, or that he would be so ready to tell me right out that he didn't feel bound by his orders from the headquarters I came from.

Those orders, after all, weren't just arbitrary. They were specific to Kunsan precisely because of the closeness to enemy territory and radar. A sudden mass takeoff might be detected and interpreted by the Communists as a warning of imminent attack. (In fact, in view of what the major was about to tell me next, the enemy wouldn't be very foolish to think that). So there was strong reason to keep his planes tightly under higher control, whether or not the major thought that violated principles of war.

I didn't react. I wanted to explore what conditions might lead him to launch his planes. I asked him how he would interpret a sudden outage of communication that came during an intense crisis. He said yes, that might well lead him to get his planes off the ground without orders from above.

Again, that wasn't a surprise in itself, or wouldn't have been on some other base, where it didn't imply any violation of their directives. This was so even though in that era outage of communications from natural disturbances was a fairly frequent phenomenon. Atmospheric disturbances disrupting high frequency communications occurred virtually every day in the Pacific.

Even underwater cables to Japan had recently been cut accidentally by trawlers. During an actual crisis, all communications between NORAD and our Ballistic Missile Early Warning System (BMEWS) had gone out at the same time, because, as I recalled, a forest fire destroyed one set of landlines on one side of the continent and an earlier earthquake had destroyed the lines on the other.

Nevertheless, commanders and staff officers had told me that they would regard a sudden disruption of communications during a crisis as a very ominous sign, requiring at the least a high level of alert and perhaps a launch of some planes. So the major wasn't answering differently from other bases. He just wasn't

acknowledging that his different directives would slow him down.

Now the big question, what would the effect of these alerting measures be?   I asked him what he thought would happen if he ordered the planes off.

He said, "Well, you know what the orders are." He looked at me, but this time I said, "You tell me."

"They go to a rendezvous area and fly around, waiting for further orders. They can do that for about an hour, and still have enough fuel to get to their targets or to come back. If they don't get an execute message, they're supposed to come back. Those are their orders."

They would be out of communications with the base at their rendezvous area, he'd told me earlier. If they were there as part of a theater-wide alert, there would be a coordinating plane with them at the rendezvous with stronger communications gear, sent from another base. But if he had sent them up himself, they would be circling up there by themselves, unable to send any messages out.

I asked, "How do you think that would work? If they didn't get an execute message."

The major said, "Oh, I think they'd come back." Short pause.

"Most of them."

The last three words didn't register with me right away because even before they were out of his mouth my head was exploding. I kept my face blank but I was screaming to myself inside, "Think? You think they'd come back?!"

This was their commander, I was thinking, the one who gave them their orders, the man in charge of their training and discipline.

He added, "Of course, if one of them were to break out of that circle and go for his target, I think the rest would follow. And they might as well. If one goes, they might as well all go. I tell them not to do it, though."

I continued to keep a blank face. I had a few more questions to ask. Wasn't it true that there was a chance that these Mark-28 weapons underneath the planes had some risk of a partial nuclear explosion if they were in an accident on the runway? He nodded. I set the scene. What if the first five pilots to take off were to look back and see a mushroom cloud over the base, after the sixth plane exploded on the runway? What would they think, what would they do, after they felt the blast wave?

His first response was indirect. "Well, of course it's not

like Okinawa, where that would mean to the pilots that their families had just been destroyed." He meant, it turned out, that the likelihood that pilots would disobey their instructions and go on to target without explicit orders would turn on who had been killed in that explosion, as much as whether they thought it was an accident or an attack.

On Okinawa, where some of them had dependents stationed on the base, "they'd go on, of course," if a blast wiped out their families. After all, they couldn't be sure it was an accident. On Kunsan, if the pilots in the air realized that they'd lost the major and the base but they weren't sure it was an enemy attack, they might look for a recovery base and come back, if they didn't get a go-ahead order.

After he had made this distinction, I reminded him that the premise of the question was that pilots had been launched on alert for the first time ever, whether by Tokyo/Osan or by the major. With that in mind, and all the more if this had arisen out of a crisis, he agreed that a nuclear explosion on Kunsan, or for that matter a report of one on Osan or Kadena, would make his pilots certain that an attack was underway. Communications would be out, so they couldn't get an order to return. They would go on to their targets.

At one point in our discussion, the major mentioned a letter that Admiral Felt was holding from President Eisenhower authorizing

him to use his own judgment on using nuclear weapons if he were out
of touch with Washington. I asked him where he'd heard about that,
and he said he had heard it at Osan. So that story, whether it was
true or not, wasn't confined to the Nuclear Control Officers at
CINCPAC and at Seventh Fleet, who had told it to me. The major
didn't claim that he or his immediate superiors had any such letter
or verbal authorization like that, and he didn't make any
connection between what he'd heard and the answers he was giving me
about the initiatives he or his pilots might take. But it seemed
to me there was a link, all right. There had to be.

END NOTES

1. Note on development of narrative:

Describe devices for making it physically impossible (rather than allegedly "unthinkable," "against orders") to launch or fire weapons without high-level or presidential authorization: what later came to be known as Permissive Action Links.

I came onto this concept early, via Jack Carne, in investigating the authentication problem. <u>Describe this problem.</u> Jack suggested the analogy of a combination lock (instead of an envelope, which is what I was criticizing). He then suggested that the lock could be used to lock up the weapon from use, unless the proper code were supplied.

(Find and quote my memo to AJW of 1958 on this issue. How did I learn about it that summer? Didn't I need to encounter it in the Pacific, in 1959? Yet I'm sure I wrote the memo in 1958).

--this threw into relief the "administrative" nature of the existing system of control, and the possibility of a different sort of system. The resistance to the latter, a physical system, exposed the true concerns of the military staffers and commanders.

--some of these reflected operational realities, of which civilians tended to be unaware, and of which the military were not eager to educate them. (Complexity, planning time, training, unreliability of communications, vulnerability of command and control).

--others reflected distrust of the will and nerve of civilian leaders, their resolution and steadiness, their desire for centralized control, their ignorance of the above factors and unrealistic belief in their ability to manage events; but also distrust of their willingness to use nuclear weapons, to go first, to believe in or gamble on damage-limiting and preemption, to understand the possibilities of this and its dependence on fast reaction or preemption, the advantages of striking first; the possibilities of photo-reconnaissance and comint and elint (secret);

--all this pointed to extreme unwillingness (in 1961 and ever since, when the issue arose: see <u>Crimson Tide</u>) to see physical control over the decision to launch.

See the sloppiness over authentication (the envelopes, which I learned as early as 1958: how?) as a basic unconcern with authentication, with who the order originated with.

--Prior issue of vulnerability, discovered by RAND; combined with a preoccupation with first strike (and later, damage-limiting). (But in my own education, I discovered this late, not

till...1960?   1961?   Then, the first-use part, not till...the
Quemoy study of 1964?   It came up on Berlin...see my concern for
Khrushchev's threats in 1959, in my Lowell Lectures...

A major reason for fearing physical control: fear that the
president would take command of this himself, not only jeopardizing
survivability (if the president were killed) but, more importantly,
slowing preemption if he were alive, foregoing preemption
altogether, and preventing first-use.   Note their efforts to get
predelegation for Laos (vs. the Chinese); or Taiwan Straits?; then
the drive for it in the election campaign of 1964.   \

The President couldn't have insisted on keeping the
combination strictly for himself, given the survival problem; but
he could have insisted that it be kept in the hands of civilian
authority, along with drastic measures to assure that some civilian
authority survived.   The devolution problem: Partridge Committee,
1961, and earlier the Gates Panel, both of which I worked on.

Moreover, such an attitude would have gone along with
forbidding them from delegating (or distributing combinations to
PALS) to lower levels of command, for early first-use.   (Note that
PALS were long kept off SAC altogether, and are still off SLBMs,
despite note at end of Crimson Tide.

See issue of resistance to PALS as: 1) a danger in itself; 2)
symptomatic of an attitude, toward FU, preemption, damage-limiting,
early initiation of all these, related to issues of force size and
precision (see Discriminate Deterrence); 3) influence of these
attitudes on proliferation and imitation of hair-trigger postures
in other countries; 4) aside from imitation, the likelihood of
comparable attitudes and postures in all other nuclear countries.

The recent form of these dangers and debates is in the context
of automated launch-on-warning of missiles; the Russian "Dead Hand"
or Doomsday system (unlocking and sending off missiles
automatically) (close to Kahn's Doomsday Machine); and proposals
for de-alerting.   (All these problems arise primarily with alert
weapons, though an unauthorized action could utilise an unalert
weapon, where the incentive was something other than preemption,
e.g. terrorism or catalytic action.

2.   Note some actual false alarms.   World War I got underway
because Russia was hardwired to mobilize fully (i.e., against
Germany as well as Austria) in response to German or even Austrian
mobilization, even though the latter was aimed only at Serbia, not
Russia; in turn, France was hardwired to mobilize if Germany (and
its ally, Russia) did; and Germany was hardwired to attack France
if Russia and France mobilized, in order to defeat France quickly
and first before turning to attack Russia.

This was an exact counterpart to the nature and rigidity of SAC planning against the "Sino-Soviet Bloc." Note that I had studied the World War I case in the '50's, in particular by reading Sidney B. Fay's account of the origins of the war, and my thinking was very influenced by the parallel.

This was even before Barbara Tuchman's <u>Guns of August</u> introduced this analogy to JFK and others, <u>with no discernible effect on nuclear war planning</u> (despite JFK's directive that the book be read in all the war colleges). Tuchman's book might conceivably have influenced JFK toward caution during the Cuban Missile Crisis (though I know of no direct testimony regarding this).

Scholarship in the last fifteen years, especially appearing in <u>International Security</u>, has strongly confirmed and elaborated these aspects of World War I planning and alerts on which my perception of the analogy was based. I'm not sure that these historians have ever become aware of how closely nuclear war preparations corresponded to these features.

But the work of Scott Sagan and Bruce Blair and John Steinbruner on command and control and alerting systems and dangers both in the US and the Soviet Union/Russia shows the same awareness and concern as mine.

On false alarms: the Tower-Hart study for the Senate in 1978 (?) showed some 174 (?) false alarms of strategic attack in an 18-month period, including 3 serious ones.

Other examples of major Soviet false alarms have come out in recent years.

McNamara and Bundy continue to claim that Khrushchev's fear of a US invasion of Cuba in 1962, and his response to this fear, was a false alarm (though, they admit, one with some plausibility), is basically false. He was responding to real preparations and readiness, even if invasion was not a certainty.

However, the "second Tonkin Gulf attack" on the DeSoto patrols in 1964 was a strong example of a false alarm, leading to actual attacks in "response."

Likewise, the US interpretation of antiaircraft and SAM firing during the Cuban Missile Crisis, as inspired and directed by Khrushchev.

Likewise, the US interpretation of NLF attacks on Pleiku and Qui Nhon as tactically directed by Hanoi. (How about: Brinks? Bien Hoa?) And even the first attack on the DeSoto patrol. (Though in all these cases, Hanoi did leave the decision to local forces, without forbidding attacks on the US or, as far as we know,

reprimanding them afterwards).

The Manhattan Project, as a "response" to warnings of a German crash program on an atomic bomb.

The US bomber buildup, as a response to the "bomber gap."

The US bomber and missile buildup, as a response to the "missile gap."

The Korean War, so far as the North Korean attack was seen as the precursor to attacks in Europe.

The shootdown of an Airbus by the guided missile cruiser (?) Vincennes, in the Persian Gulf (in the belief that it was a military plane descending in an attack, whereas it was actually ascending).

The shootdown of KAL-007 by a Soviet air defense pilot.

Various false alarms (or potential false alarms, including a missile launch) on both sides during the Cuban Missile Crisis, described by Sagan.

Other examples by Sagan.

3. I'm not sure to what extent this claim was historically or bureaucratically deserved, but it was generally accepted at RAND. At the very least, he gave a useful explanation of its rationale, one that stimulated my own thinking very much. I can give an account of this rationale, if necessary, in the text, to give something of the nature and quality of RAND thinking of the sort that attracted me and that I participated in, and to give more body to the discussion that follows. Or not.

4. This option has never existed for ballistic missiles, which cannot be recalled once launched. Reagan once made a public statement to the contrary, for submarine-launched missiles. He really may not have known better. Incredibly, Carter once made a similar statement. This is a dismaying confusion for a president to suffer.

Something similar to positive control could be achieved for ballistic missiles if a "destruct in flight" capability were added to the missile, which could be triggered on command. This does exist for space shots, and perhaps for some tests, but not for military missiles with live warheads.

(It could even be programmed to work automatically unless a positive signal were sent and received countermanding it! No one has ever suggested this, and it would be dangerous if it encouraged national leaders to believe that they could launch missiles

relatively safely under ambiguous circumstances, given the likelihood that some of the destruct mechanisms would fail to operate. I mention it only because it would be an even closer counterpart to the positive control system for bombers, though of course it would not provide for the missile's return with its warhead, a procedure whose dangers would be hard to overlook.)

This has often been proposed seriously, not really to permit launch on ambiguous warning but to permit destruction in case of accidental or unauthorized launch. It has always been successfully resisted by the military, on the grounds that it would be one more complexity that could lead to misfire. But since under current circumstances the danger that a given missile will not explode when desired is much less important than the danger of accidental or unauthorized launch, the case for implementing this safeguard seems very strong.

5. And his superiors might agree that he should not be punished, or even that he should be commended, for saving the ship even if he had been insubordinate. On the other hand, they might feel that his disobedient initiative had to be punished even if it did save the ship. These uncertain prospects bear on the subordinate's expectation of punishment if he disobeys current orders. But for the most conscientious and experienced subordinates, that will not be the only or the determining consideration.

It does not take a very acute reader to notice that my early interest in these questions prefigured the question as I saw it ten years later, whether I should copy the Pentagon Papers, violating instructions and my earlier promises.

Dramatic accounts of mutinies present similar issues and subjective considerations. See The Caine Mutiny, Paths of Glory, and in particular the Denzel Washington/Gene Hackman conflict in the submarine movie Crimson Tide, which deals with the precise ambiguities and decision problems considered here: whether or not to follow standing instructions on authentication; whether or not to launch submarine missiles on incompletely authenticated and transmitted orders; whether or not to accept the judgment of a particular local commander. Of course, the same issues were raised earlier in Dr. Strangelove, based on the books Red Alert and Fail-Safe.

Jeff Stein's book on the deliberate, "well-intentioned" insubordination (deception of higher authority) underlying the 1969 Special Forces murder trial, A Murder in Wartime, is discussed later, since the dropping of that case directly triggered my decision to copy the Papers.

6. The recent book One-Point Safe, the more or less realistic journalistic account on which the movie is based, describes the

current safety standard as "one-point safe," i.e. as requiring only that there will be no significant yield unless more than <u>one</u> section is accidentally detonated. Frank von Hippel tells me that this is correct, in terms of current standards for safe weapons. This would seem to be a lower standard than we were told about in 1960, but current designs might make it adequate. I am certain, from my notes, that the expression given to us and described then was "three-point safe," with anything less than that being regarded as significantly prone to nuclear accidents.

7. There wasn't an easy fix. They could make full-scale rehearsals, taking off from alert pads with bombs aboard, routine, so that an intense false alarm wouldn't create a near-certain conviction that war was underway.

This was what SAC did. And not without risk. Several accidents with planes on airborne alert causing the dropping or jettisoning of nuclear bombs led to high explosive detonations and in some cases the failure of safety mechanisms came close to permitting a nuclear yield. But the risks of this practice would have been much greater in the tactical forces. SAC weapons were much safer, and they were carried internally.

In the Pacific and elsewhere in the tactical forces, the future, hypothetical danger I was projecting of the dangers of a possible false alarm would have been lowered by drills, but these would have raised the immediate, recurrent danger of an accidental explosion at the base (or from an airborne collision or malfunction). That was not an appealing solution.

Tactical forces with these weapons could have been taken off alert, throughout the world. (That, unquestionably, is what should have been done, for a whole variety of reasons including this one). But that ran against a set of organizational barriers involving interservice and intraservice rivalries for budget and mission, units' sense of importance and elan, and the overall sense of crisis and threat that served and was fueled by these other incentives.

Or some variant of Jack Carne's combination locks, what came to be called Permissive Action Links (PALS), could physically prevent the pilots of these planes from detonating their weapons without a positive order. (PALS were, eventually, installed on planes like these).